

JAN 04 2005

Appl. No. 10/006,984
Amdt. dated December 28, 2004
Reply to Office Action of October 4, 2004

PATENT

REMARKS/ARGUMENTS**Amendments**

The specification is amended to amend the title to be more descriptive. Additionally, the claims are modified in the amendment. More specifically, claims 1, 3, 5, 8-11, 14, 17, and 19-21 have been amended. Therefore, claims 1-21 are present for examination. No new matter is added by these amendments. Applicant respectfully requests reconsideration of this application as amended.

Interview

Today, Examiners Albertalli and Smits granted an interview to discuss the outstanding Office Action and suggested amendments. No agreement was sought nor was any agreement reached in this interview as this was just a courtesy call to explain our arguments presented below. Granting of interviews is always appreciated.

35 U.S.C. §103 Rejection, Sohn et al.

The Office Action has rejected claims 1-8, 10-11, 13-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over the cited portions of Non-Patent Literature Document "A Voice Activity Detector Employing Soft Decision Based Noise Spectrum Adaptation" to Sohn et al. (hereinafter "Sohn"). The Office is charged with putting forth a *prima facie* showing of obviousness. Applicants believe a *prima facie* case of obviousness has not been properly set forth in the final Office Action. The basic test is excerpted below:

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

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The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure." MPEP §2143, Original Eighth Edition, August, 20b01, Latest Revision May 2004.

Applicants believe the rejection has flaws with the three prongs of the above test for establishing a *prima facie* case of obviousness as outlined below.

Teachings Missing from the Cited References

With regard to the third prong of the test, Applicants believe that Sohn does not, either alone or in combination, teach or suggest the invention in the claims. More specifically, Sohn doesn't teach or suggest use of *features* to distinguish speech from silence as required by the claims. Sohn uses probability density functions of a one-to-one reversible transformation of the digital signal, but the claimed invention uses *features* of the digital signal. Accordingly, processing requirements of Sohn are far more substantial.

Official notice is taken of the proposition that speech changes with respect to time. This doesn't mean that a changing statistical model for this application is known, namely an adaptive model for speech detection that uses features. It is not clear from the Office Action if official notice is also taken of using adaptive models for speech/noise PDFs. Office Action, page 4, fifth and sixth paragraph. Use of adaptive models require substantial engineering and experimentation required to implement them in a particular application. Accordingly, Applicants respectfully request clarification as to what limitations the Office is relying upon official notice for teaching. If official notice is relied upon for the adaptive models for speech/noise PDFs, an express showing of documentary proof is requested for this proposition as this right is set forth in MPEP 2144.03. This documentary proof would allow the Applicants the opportunity to demonstrate how a particular prior art teaching would not work in the claimed application.

The dependent claims provide limitations that are also not taught or suggested by Sohn. For example, claim 4 requires use of increasing the likelihood for the adaptive algorithm. Sohn does not use an adaptive algorithm that increases likelihood, Sohn uses a mean square approach. Also, claim 5 requires the adaptive algorithm to identify extreme values, which Sohn

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does not teach or suggest. Sohn uses a linear estimate employing all previous values such that extreme values are not identified or distinguished in any way. If the Office continues to rely on Sohn for these teachings, a more detailed explanation is respectfully requested.

Motivation to Combine Sohn with Official Notice

The first prong of the test requires, a suggestion or motivation to combine references to avoid hindsight reconstruction of the claimed invention based upon the information disclosed in the present application. The fifth and sixth paragraphs on page 4 of the Office Action appear to address the motivation to combine Sohn with the official notice, but the Applicants believes this falls short of what is required.

If the Applicants follow the argument in the Office Action, official notice is apparently relied upon to combine these references as the motive stated in the Office Action cannot be found in Sohn. The Office Action relies upon official notice for the proposition that speech signals are nonstationary. Office Action, page 4, fifth paragraph. A logical leap is then made that their statistical models would change over time. It is not clear if official notice is taken of this proposition also. The Office Action then takes the position that there is motive for adapting a speech PDF and noise PDF, but no cite is given for this.

If official notice is being proposed and maintained for the propositions that there is some type of motivation to combine Sohn with the other official notice and that official notice is being taken of adapting speech and noise PDFs, Applicants respectfully traverse this official notice and hereby request an express showing of documentary proof of these proposition as set forth in MPEP 2144.03.

The only way this combination of Sohn with official notice makes any sense is to use the Applicant's claims as a template, which is impermissible hindsight reconstruction. Specific motivation relevant to the claimed limitations is respectfully requested in any further action by the Office.

Reasonable Likelihood of Success in Combining Sohn

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The second prong of the test requires a reasonable likelihood of success in making the suggested combination. It is not entirely clear to the Applicants how Sohn is being combined with what official notice. Sohn uses a Gaussian approximation of the speech signal itself (hence its DFT is Gaussian), but it is not clear that a PDF based upon features not being one-to-one mappings of speech could be reasonably approximated in the manner taught by Sohn. Speech processing systems are some of the most complex digital circuits imaginable. Applicants believe that combinations of elements and official notice in the suggested manner are unlikely to succeed without undue experimentation. Reconsideration of the rejection is respectfully requested.

35 U.S.C. §103 Rejection, Sohn et al. in view of Huang et al.

The Office has rejected claim 8 under 35 U.S.C. §103(a) as being unpatentable over in view of the cited portions of U.S. Patent No. 6,421,641 to Huang et al. (hereinafter "Huang"). As best understood by the Applicants, the Office Action posits that the Gaussian model of Sohn should be somehow removed and substituted with a Gaussian mixture model of Huang. Beyond the problems noted above, Applicants believe the first two prongs of the *prima facie* obviousness test are also not satisfied.

Motivation to Combine Sohn with Huang

Official notice appears to be the basis for combining these references as there is no cite to any reference for this motive, namely, to "speed the entire classification process." Office Action, page 9, first paragraph. If official notice is indeed the basis for this motive, an express showing of proof is requested.

Reasonable Likelihood of Success in Combining Sohn and Huang

Claim 8 requires use of a Gaussian mixture model for one of the PDFs. Sohn relies upon simplifications only possible due to the Gaussian assumption. It is not clear how Sohn could be modified given its Gaussian assumption for use in a Gaussian mixture model. Certainly, any attempt to modify Sohn in this way would require undue experimentation and would have little likelihood of success given the simplifications of Sohn only possible with the Gaussian assumption.

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35 U.S.C. §103 Rejection, Sohn et al. in view of Paez et al.

The Office Action has rejected claims 1-8, 10-11, 13-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over Sohn in view of the cited portions of Non-Patent Literature Document "Minimum Mean Squared Error Quantization in Speech PCM and DPCM Systems" to Paez et al. (hereinafter "Paez"). Beyond the problems noted above, Applicants believe the first two prongs of the *prima facie* obviousness test are not satisfied.

Motivation to Combine Sohn with Paez

Official notice appears to be the basis for combining these references as there is no cite to any reference for this motive, namely, to "model the actual speech more accurately." Office Action, page 9, second-to-last paragraph. If official notice is indeed the basis for this motive, an express showing of proof is requested. Paez models the *speech* signal, it is not a good model for a general speech feature.

Claims 17 and 19-21 have similar problems with any motive to combine. Clarification of the official notice and showings of proof are requested for these claims also.

Reasonable Likelihood of Success in Combining Sohn and Paez

Claim 9, for example, requires use of a non-Gaussian model for one of the PDFs. Sohn relies upon simplifications only possible due to the Gaussian assumption. It is not clear how Sohn could be modified given its Gaussian assumption for use in a non-Gaussian model. Certainly, any attempt to modify Sohn to incorporate elements of Paez in this way would require undue experimentation and would have little likelihood of success given the simplifications of Sohn only possible with the Gaussian assumption. Claims 17 and 19-21 have similar problems that would preclude any successful combination.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

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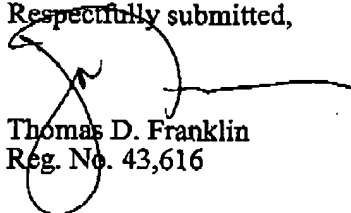
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If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,



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